

European
Global Navigation
Satellite Systems
Agency



EGNOS

NAVIGATION SOLUTIONS
POWERED BY EUROPE

EGNSS: Status and prospects

CLGE GA

Eduard Escalona – European GNSS Agency (GSA)

27 September 2019 - Istanbul, Turkey

The GSA in a Nutshell



➤ 202 Staff

➤ 21 Nationalities

➤ GSA (Prague)

➤ Galileo Security Monitoring Centre (GSMC)
St. Germain en Laye, FR
San Martín de la Vega, ES



GSA



The GSA is evolving to EUSPA



A unique know-how of delivering satellite services and reaching the users

Synergies between the different components of the EU Space Programme

The European Parliament and the European Council agreed on a **new EU Space Programme Regulation** and enlarge the responsibilities of the GSA

January 2021:

GSA is becoming **the EU Space Programme Agency (EUSPA)**

Copernicus
GovSatCom



Space and Situational
Awareness (SSA)

New Galileo services on the horizon



- **High Accuracy Service (HAS)** – PPP corrections across the globe directly via Galileo satellites on the E6 frequency and/or the Internet, targeting dm-level applications
- **Authentication services** through the **Open Service Navigation Message Authentication (OS-NMA)** and the **Signal Authentication Service (SAS)** to assure that the positioning is based on real Galileo satellites signals to prevent spoofing or meaconing

High Accuracy Service (HAS)



Commercial Service (CS) intended for broadcast of value added data, such as **high accuracy** and **authentication**

March 2018: EC implementing decision

→ **Galileo High Accuracy Service (HAS) FREE of charge**

- Allow innovation in consolidated and emerging markets.
- Minimize disruption to the current business models of established providers

→ **Galileo will be the first constellation able to provide such High Accuracy service globally**



High Accuracy Service (HAS)



HAS will be based on the provision of accurate satellite data (**clocks, orbits and biases**) and **atmospheric data** (mainly ionospheric corrections) to **enable PPP**

HAS PPP corrections data will be transmitted through an **open format in the Galileo E6B signal**, using 448 bits per satellite per second (also, planned to be available through auxiliary channels)

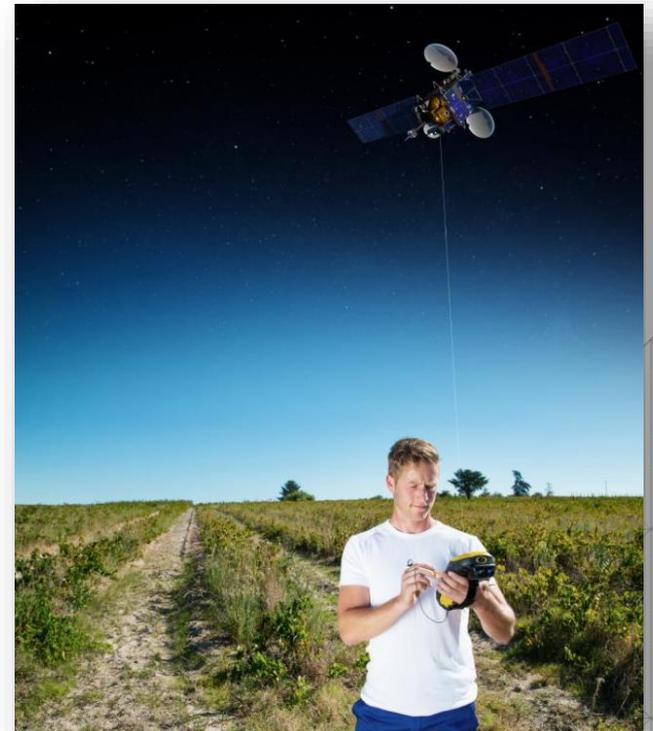
The format is based on **RTCM-CSSR** adapted to the Galileo E6B channel

Multi Constellation (at least Galileo + GPS)

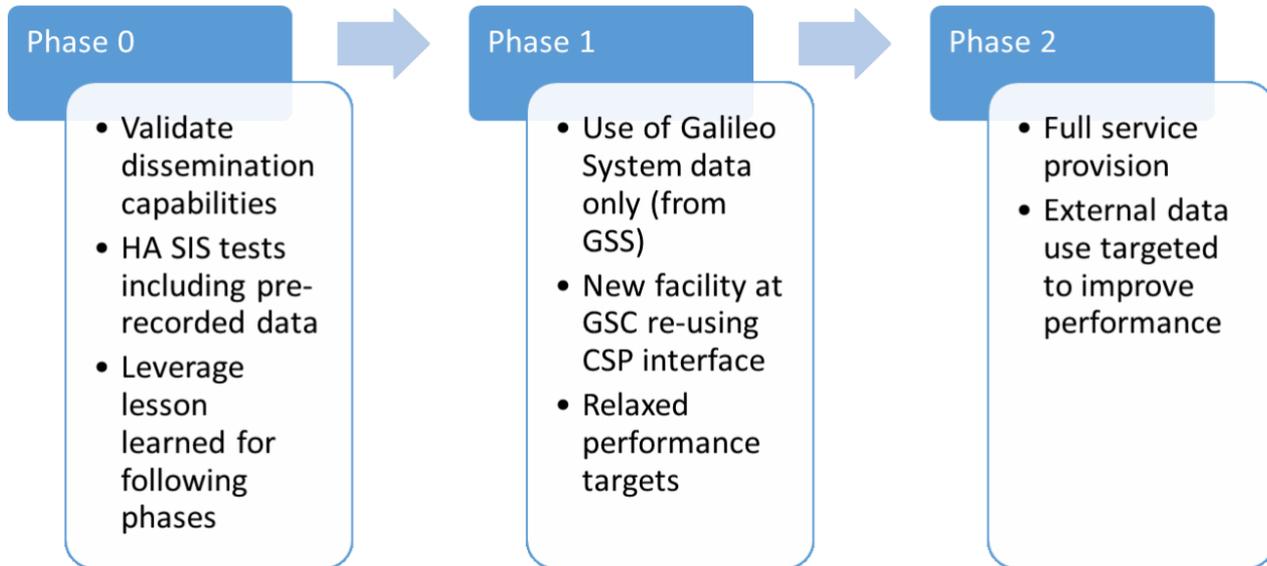
Enabling **GLOBAL** Positioning with **Accuracies < 20 cm (H) / 40 cm (V)**

Improved Convergence for the **Regional Service**

2 HAS Service Levels:
Global Service Area (SL1)
Regional Service Area (SL2)



The Galileo High Accuracy Service will be gradually rolled out as of 2020



Tests started by mid Feb'19 and continued

Under procurement
Based on existing infrastructure
By 2020 (signal)
2021 (service)
Not global - relaxed performances

Under design
Global (SL1), full accuracy service, possibly including ionospheric information to improve convergence regionally (SL2)

Is a smartphone the next generation of GIS mapping tool?



Android 7+ access to raw GNSS measurements

Dual frequency E1/E5 mass market receivers

Over 1 billion phones with Galileo



To engage with leading experts in navigation and positioning, and **boost innovation around this new feature:**

- Workshops
- White papers
- Testing results
- Guidelines



GSA GNSS Raw Measurement Task Force

Mobile apps are becoming increasingly important in Geomatics

Is a smartphone the next generation of GIS mapping tool?



Android 7+ access to raw GNSS measurements

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Leads to:

Advanced positioning techniques

Open the door to use of augmentation techniques in smartphones

(3GPP) standardisation of PPP-RTK corrections for assisted data in mobile phones



Sub-meter positioning with the smartphones

Mobile apps are becoming increasingly important in Geomatics

EGNSS R&D Programmes



15 Years of EU Satellite Navigation  **ESA**

August 2009-2019
144 projects funded
86 products
202 prototypes
23 patents
239 demonstrations



5th Horizon 2020 EGNSS downstream applications Call

WHERE INNOVATION MEETS SPACE.

HORIZON 2020

€21 Mil
Opening: 5 November 2019
Deadline: 5 March 2020

HORIZON EUROPE
The New EU Framework Programme for Research and Innovation
2021-2027



New Call: EGNSS market uptake 2020

H2020-SPACE-EGNSS-2020



Opening: 5 November 2019
Deadline: 5 March 2020

Type of Action*	Topic	Indicative budget (EUR mln)	Funding rate	Indirect costs
IA	EGNSS applications fostering green, safe and smart mobility	10	70% (except for non-profit legal entities, where a rate of 100% applies)	25% of the total eligible costs excluding: <ul style="list-style-type: none"> • Subcontracting • Costs of resources made available by 3rd parties • Financial support to 3rd parties
IA	EGNSS applications fostering digitisation	4		
IA	EGNSS applications fostering societal resilience and protecting the environment	4		
PCP	EGNSS applications for public authorities pilot	3		

Overall indicative budget: 21,000,000

***IA:** activities aimed at producing plans and arrangements or designs for new, altered or improved products, processes or services

PCP: Pre-Commercial Procurement actions aim to encourage public procurement of research, development and validation of new solutions that can bring significant quality and efficiency improvements in areas of public interest, whilst opening market opportunities for industry and researchers active in Europe. It provides EU funding for a group of procurers ('buyers group') to undertake together one joint PCP procurement, so that there is one joint call for tender, one joint evaluation of offers, and a lead procurer³ awarding the R&D service contracts in the name and on behalf of the buyers group.

Horizon Europe consultation



- Significantly increase the budget of **Horizon Europe** in comparison to H2020 (*continue the H2020 grants and FE*)
- Introduce **New Funding Tools** to cope with the new needs (also via the Space Regulation “innovation actions”)
- Innovative Chipset & Receiver Technologies Development Needs
- Emerging applications by market segment

Geomatics (Surveying)

Crowdsourcing and Autonomous Land Surveying (2D,3D)
3D Cadastral, BIM, GNSS/IoT infrastructure Monitoring
Sensor fusion (LIDAR, IMU, cameras, Aug./Mix. Reality)
Autonomous mining
Dredging and Marine Surveying (e.g. bathymetries)
Drones and EO (Copernicus)

GSA GNSS Market Report



Comprehensive source of knowledge and information on the dynamic, **global GNSS market.**

The report is published **every two years since 2010.**

Provides **comprehensive, in-depth analysis of global trends**, and the **latest developments** in terms of **shipments, revenues and the installed base of GNSS devices and applications** in key GNSS market segments

The report is free

(650.000 downloads in 2017)



GSA GNSS Market Report Issue 6



COMING SOON

2019 / ISSUE 6

GSA GNSS Market Report

EDITOR'S SPECIAL
GNSS AND NEW SPACE

European
Global Navigation
Satellite Systems
Agency

Issue 6
15th October 2019

GSA GNSS Market Report Issue 6



On top of the traditional market analysis rich of figures describing shipments, revenues and installed base of receivers, this edition includes:



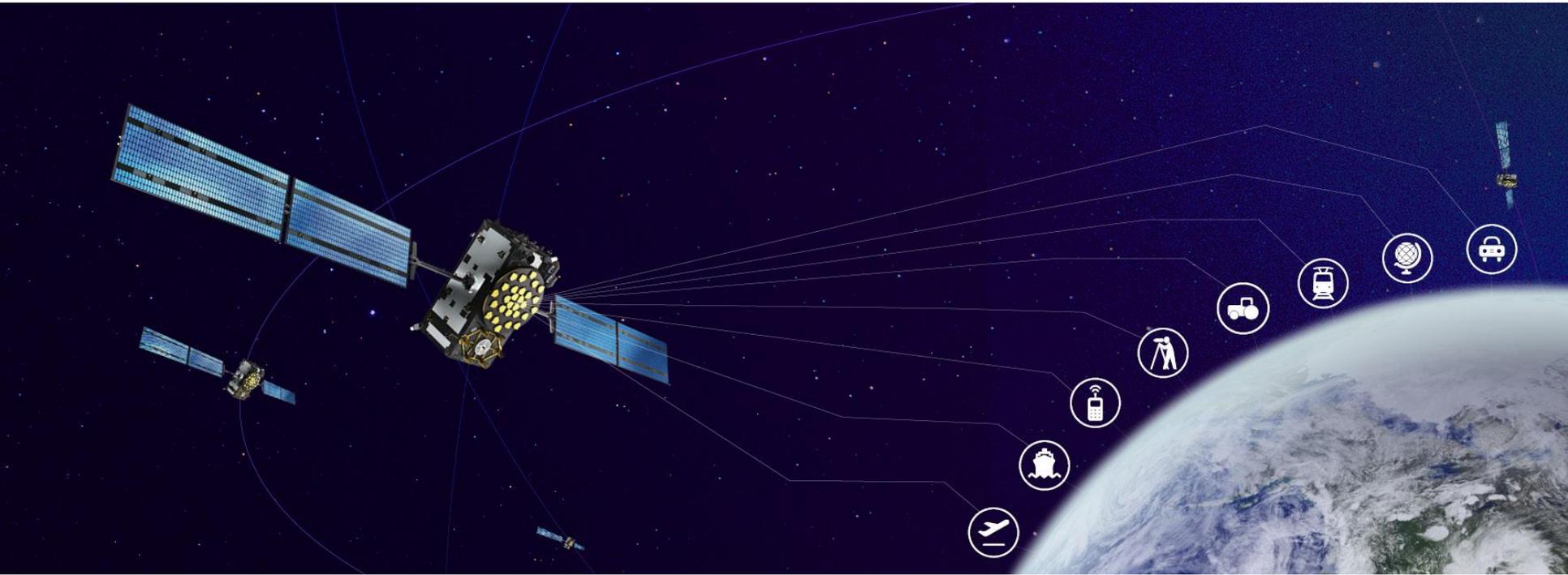
An **expanded session on “macro trends”** – such as **Internet of Things, Smart Cities and Big data**

Segment-specific **“user perspectives”**, also highlighting the increasingly stringent **users’ requirements**

The **EGNSS added value per segment**, specifically showing how E-GNSS enhances the functioning of many applications

An **editor’s special** illustrating the role of **Remotely Piloted Aircraft Systems**

Would you like to know more and to be amongst the first to receive?
Register here:
<https://www.gsa.europa.eu/market/market-report>



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Questionnaire



GALILEO **EGNOS**

NAVIGATION SOLUTIONS
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The joint use of EGNSS and Copernicus, an array of synergies



Synergies

Value-Added app

Disaster management

Precision farming

Natural resources management

Smart mobility

